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(74) see (73)

(54) DEVICE FOR COATING OF THREAD-FORM SUBSTRATES IN A VACUUM

(55) Machine construction; device; coating; thread-form substrates; vacuum; anode wires; substrate support; planetary drive

(57) The invention relates to a device for coating of thread-form substrates in a vacuum. The invention applies to the field of machine construction and relates to a device for coating of, for example, anode wires. With the invention it is a matter of a device for coating of thread-form substrates in a vacuum, in which device two discs, which serve the supporting of the substrates, are attached to an axle at a distance from each other, and the axle is connected, at one end fixedly and at the other end rotatably, to a wheel in each case, the contact surfaces of the wheels resting on a centrally-driven platter, which has a open space for a planetary gear moved by the same drive shaft, which planetary gear bears a fork that guides the axle in each case between wheel and disc in a frictionless manner. Through the device according to the invention, it is possible for the first time to coat thread-form substrates in a uniform manner over the entire surface. Fig. 1

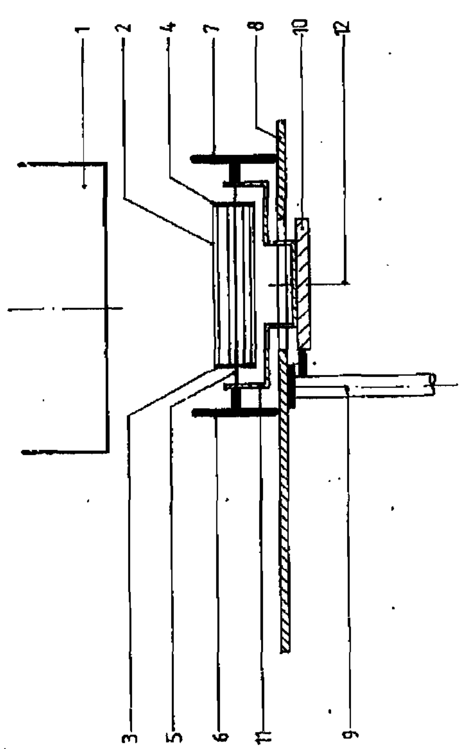

Fig.1

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PATENT CLAIM

Device for coating of thread-form substrates in a vacuum, **characterized in that** two discs (3, 4) that serve the supporting of the substrates are fastened onto an axle (5) at a distance from each other, and the axle (5) is connected, at one end fixedly and at the other end rotatably, to a wheel (6, 7) in each case, the contact surfaces of the wheels (6, 7) resting on a centrally-driven platter (8), which has a open space for a planetary gear (10) driven by the same drive shaft (9), which planetary gear bears a fork (11) that guides the axle (5) in each case between wheel (6, 7) and disc (3, 4) in a low-friction manner.

1 page of accompanying drawings

APPLICATION FIELD OF THE INVENTION

The invention relates to the field of machine construction and concerns a device for coating of, for example, anode wires.

CHARACTISTICS OF THE KNOWN PRIOR ART

Numerous devices for coating of substrates in a vacuum have already been described (DD 127088, DD 223171, DE 2813180, DE 3138351). The known technical solutions concern devices that are arranged in a vacuum chamber, at a distance from the material sources (vaporizers, sputter targets), as movable substrate holders. The material stream emanating from a material source during the coating process has a density distribution that does not ensure a homogeneous coating thickness over the lengths or areas, as the case may be, of the substrates. Up to now, no devices for thread-form substrates have yet been described.

GOAL OF THE INVENTION

The goal of the invention is to develop a device suitable for a thread-form substrate, for the purpose of coating this substrate.

EXPLANATION OF THE ESSENCE OF THE INVENTION

The invention is based on the task of specifying a device for coating of thread-form substrates in a vacuum, which device ensures a homogeneous coating thickness on the substrates over the entire surface.

According to the invention, the task is solved through the fact that, in a device for coating of thread-form substrates in a vacuum, two discs that serve the supporting of the substrates are fastened onto an axle at a distance from each other, and the axle is connected, at one end fixedly and at the other end rotatably, to a wheel in each case, the contact surfaces of the wheels resting on a centrally-driven platter, which has a open space for a planetary gear driven by the same drive shaft, which planetary gear bears a fork that guides the axle in each case between wheel and disc in a low-friction manner.

The central drive shaft drives the platter and the planetary gear through the material stream (1st movement). During this, the planetary gear rotates around its center axis (2nd movement). Through the relative movement of, on the one hand, the fork fastened onto the planetary gear and guiding the axle of the substrate carrier, and, on the other hand, the wheels of the axle, which wheels run on the centrally-driven platter, the substrate move around the axle (3rd movement).

Achieved hereby is the fact that the substrates pass through the material stream, which has varying density in its spatial extension, in such a way that, over the entire length of the substrate, a coating is produced that is evenly dense all-around. The number of passes of the substrates under the sputter source until the cyclical return of the same position of the substrate at the sputter source can be varied through the variation of the geometric dimensions of the device. It goes without saying that the substrates are attached at a distance from each other to or onto the discs, since otherwise the back sides of the substrates cannot be also coated.

EMBODIMENT EXAMPLE

In the following, the invention is explained in an embodiment example, which relates to a device for coating of thread-form substrates. The associated drawing shows a cross section of the device.

Inside a receiving vessel (not shown), 16 pieces of 0.02-mm thick quartz fiber as substrates 2 are located in the vicinity of a sputter source 1. The substrates 2 are stretched, at equal distance from each other, between discs 3, 4. The discs 3, 4 have a diameter of 18 mm and are fixedly arranged on an axle 5 at a spacing of 80 mm. The axle 5 has at its ends two wheels 6, 7, the one wheel 6 being fixedly attached to the axle and the other wheel 7 being rotatably attached to the axle. Both wheels run on a platter 8. The platter 8 is fixedly connected to a central drive shaft 9 and possesses an open space, in which is located a planetary gear 10, which rotates around an imaginary axis 12. Attached to this planetary gear 10 is a fork 11. In the fork 11, the axle 5 is guided on both sides, in each case between wheel 6, 7 and disc 3, 4, in a low-friction manner. The sputter source 1 is situated off-center above the course of the substrates 2. Its distance to the substrates 2 is 50 mm.

By means of the central drive shaft 9, the platter 8 and the planetary gear 10 are placed into rotational movement, wherein the planetary gear 10 maintains its position relative to the platter 8. Thus the fork 11 attached to the planetary gear 10 also rotates. This fork guides the axle 5, which in turn produces a rotational movement of the substrate 2 around the axle 5 via the wheel 6 that is fixedly attached to the axle and runs on the platter 8. Altogether, the effect of the individual courses of movement is that the substrates 2, while passing under the sputter source 1, carry out rotational movements around the central drive shaft 9, around the imaginary axis 12, and around the axle 5.

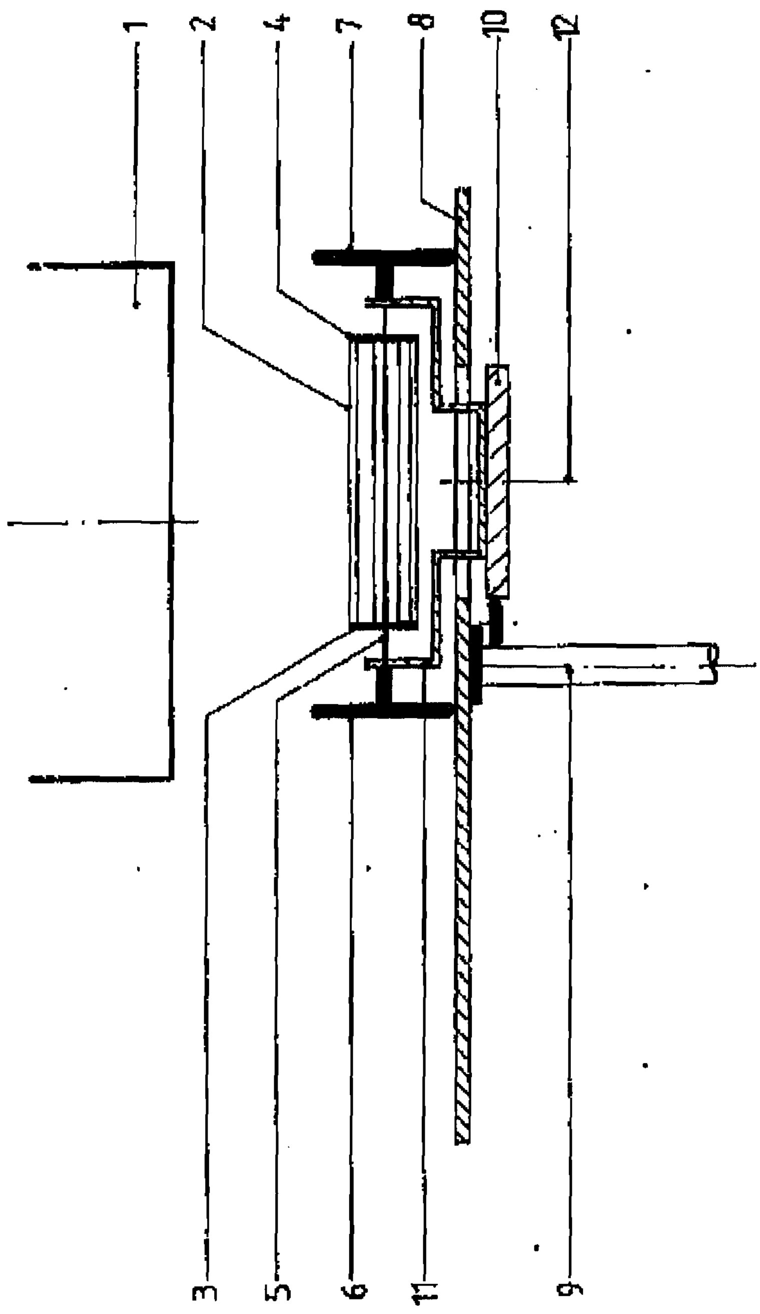

Fig-1